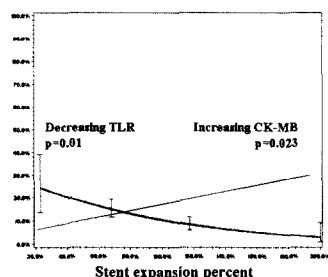


decrease in TLR (25.6%, 20.7%, 14.5%,  $p=0.01$ ) and death/Q-wave MI (9.5%, 4.4%, 4.2%,  $p=0.05$ ) in groups I, II, and III respectively with more aggressive stent expansion at one-year follow-up. However, this was associated with a stepwise increase in CK-MB release (CK-MB>3 x normal: 15.6% vs. 18% vs. 24.7%,  $p=0.023$ ).



Conclusions. Aggressive stent expansion leads to decreased TLR at one year. However, this is achieved at the expense of periprocedural CKMB release and non-Q wave MI.

## ORAL CONTRIBUTIONS

### 811 Chronic Total Occlusions

Monday, March 18, 2002, 11:00 a.m.-12:15 p.m.

Georgia World Congress Center, Room 264W

11:00 a.m.

#### 811-1 One-Year Clinical Outcome After Successful Percutaneous Coronary Interventions on Chronic Total Occlusions: Results From a Multicenter Prospective Study

Zoran Oljari, Federico Piscione, Paolo Rubartelli, Massimo D'Urbano, Leonardo Paloscia, Cinzia Marozzini, Silvio Tolaro, Giuseppe De Luca, Paolo Giudice, *Ospedale Ca Foncello, Treviso, Italy.*

**BACKGROUND:** clinical outcome after PCI of chronic total occlusions (CTO) is controversial.

**OBJECTIVE:** one year clinical follow up after successful (SP) or failed PCI (FP) in pts with single (SV) or multivessel disease (MV)

**METHODS:** TOAST (Total Occlusion Angioplasty Study) is a multicenter, prospective, observational study, enrolling all pts with at least one CTO (TIMI flow 0/1, duration >30 days) on native vessels. Pts will be followed for 5 years.

**RESULTS:** during a study period, 458 CTO were attempted in 432 pts; 87,3 had angina symptoms and 65,3% had a previous MI; SP (TIMI 3 flow and <50% stenosis) was obtained in 334 pts (stents in 88%); 2,5% of pts had in-hospital MACE. One year clinical follow up is complete for 95,7% of pts and is shown in the table, with regard to the presence of SV (columns 2-4) or MV (columns 5-7). The pts with SP and FP had similar baseline clinical characteristics.

	SP (167)	FP (38)	p-value	SP (149)	FP (49)	p-value
Cardiac death	2 (1,2%)	1 (2,6)	0,46	2 (1,3%)	2 (4,1%)	0,26
MI (Q/non Q)	2 (1,2%)	-	0,6	1 (0,7%)	4 (8,2%)	0,01
Death / Q MI	3 (1,8%)	1 (2,6%)	0,56	3 (2%)	5 (10,2%)	0,02
TLR (PCI)	16 (9,6%)	4* (10,5%)	0,7	18 (12,1%)	3* (6,1%)	0,29
CABG	3 (1,8%)	6 (15,8%)	0,002	7 (4,7%)	11 (22,4%)	0,001
Event free	143 (85,6%)	27 (71,1%)	0,06	120 (80,5%)	29 (59,2%)	0,002

TLR= target lesion revascularization;\* in 4/7 pts was performed a transmyocardial laser revascularization and in 3 a new attempt with PCI.

Among 319 event free pts, those after SP were more frequently asymptomatic (86,7% vs 73,7%,  $p=0,039$ ); among 274 undergoing stress test, those after SP more frequently performed a maximal exercise (70,7% vs 49%,  $p=0,004$ ).

**CONCLUSIONS:** 1) One year after SP a clinical outcome was significantly better in terms of angina symptoms and exercise tolerance and the pts had a significantly lower need for a CABG. 2) Furthermore, pts with MV and SP had a significant reduction of combined cardiac deaths and Q MI

11:15 a.m.

#### 811-2 Chronic Coronary Total Occlusion: A Revisit With Current Hydrophilic Guide Wire

HungChin Ho, Ming W. Liu, *University of Alabama at Birmingham, Birmingham, Alabama.*

**Background:** Coronary chronic total occlusion (CTO) remains as a clinical challenge in percutaneous coronary intervention (PCI) due to a lower success rate, 50-75% depend on the case selection. Presence of abrupt occlusion, bridging collaterals and side branch at the point of occlusion had been consistently found to be the major predictors for failure to cross the CTO. We reexamine these 3 variables with current hydrophilic guide wires.

**Methods:** From March 1999 to April 2001, there were 330 total occluded lesions. Among

these, 99 lesions were found occluded longer than 6 months and constituted the study population. Hydrophilic guide wires, Shinobi® and PT Graphix®, were used as the primary guide wire to cross the lesion. The angiograms were reviewed and measured by quantity analysis.

**Results:** There were 81 male and 17 female with age  $59 \pm 13$  years. There were 57 with hypertension (HTN), 34 with diabetes, 49 with hyperlipidemia (HLP), 43 with smoking history, 9 with heart failure and 12 with prior bypass surgery (CABG). There were 19 lesions in left anterior, 24 in left circumflex, 45 in right coronary artery and 1 in ramus. Overall successful recanalization was achieved in 82% (81/99). In-hospital outcome included only 1 emergent CABG due to perforation. Success rate based on angiographic morphology was analyzed. Patterns of abrupt occlusion were classified as occlusion with no stump, with short stump and with long stump, and successful rates were 67% (12/36), 88% (28/32) and 94% (29/31) respectively ( $p=0.003$ ). The successful rate was not different between the presence or absence of bridging collaterals, 79% (22/28) versus 83% (59/71) ( $p=0.4$ ); and not different between the presence or absence of side branch, 82% (37/45) versus 82% (44/54) ( $p=0.6$ ). Multivariate analysis revealed the absence of stump ( $p=0.001$ , odds ratio 5.37), absence of HTN ( $p=0.02$ , odds ratio 2.53) and absence of HLP ( $p=0.02$ , odds ratio 2.71) were the significant variables for failure to cross the CTO.

**Conclusion:** With current hydrophilic guide wire, absence of stump was the most significant predictor for failure to cross the CTO. Regardless of bridging collaterals and side branch, the success rate of PCI for CTO is 90% if there is a stump present.

11:30 a.m.

#### 811-3 Treatment of Uncrossable Chronic Total Coronary Occlusions With the Frontrunner: Multicenter Experience

Patrick L. Whitlow, Matthew Selmon, William O'Neill, William Knopf, Eduardo Uruchurtu, Antonio Colombo, Eberhard Grube, Hugo Londero, J. Eduardo Sousa, John Simpson, *The Cleveland Clinic Foundation, Cleveland, Ohio.*

**Background:** Chronic Total Occlusion (CTO) remains the most common reason for referring a patient with significant coronary artery disease to bypass surgery rather than percutaneous coronary intervention (PCI). PCI success in CTO's  $\geq 1$  year is < 50% because of failure to cross with a guidewire in the majority of these cases. **Methods:** We tested the Frontrunner catheter (FRC), a new device designed to radially stretch and bluntly dissect the CTO to enable distal placement of a conventional guidewire to facilitate PTCA/stenting. **Results:** 100 consecutive patients who failed conventional recanalization were attempted with the FRC. Patients were eligible only if the target lesion proved uncrossable with a guidewire for  $\geq 10$  minutes fluoroscopy time. Patient age was  $62 \pm 10$  years; 85% of patients were men. Lesion length was  $21 \pm 8$  mm (range 2 - 53mm). Target vessels were 49 RCA, 29 LAD, 17 left circumflex, 1 left main, and 4 unspecified. The lesion could be engaged with the device in 79% of cases, and in 56/79 (71%) the guidewire was positioned in the true lumen beyond the occlusion allowing stent deployment. Three different versions of the device were utilized, with successful stenting rates improving from 45% initially to 64% with version 2 to 67% with version 3. Complications included 2 perforations requiring pericardiocentesis and 4 small contained perforations not requiring treatment. One ostial right coronary dissection caused a small aortic hematoma without clinical sequelae. No QMI occurred and no emergency bypass surgery was necessary. **Conclusions:** The Frontrunner appears promising in opening chronic total occlusions not crossable with conventional techniques. Evolution of the device and operator experience have improved results, and further refinements in catheter size and flexibility are in progress.

11:45 a.m.

#### 811-4 Predicting Success in Crossing Chronic Total Occlusions With a New Guidewire

P. A. Morales, Richard R. Heuser, E. A. Weirick, C. W. Hatler, *St. Luke's Medical Center/Phoenix Heart Center, Phoenix, Arizona.*

**Background:** Chronic total occlusions (CTOs) are difficult to cross. Conventional wires are associated with failure in old occlusions, and standard laser wires are known to fail in long occlusions. A new, forward-looking fiberoptic guidance technology (Safe-Steer, Intraluminal Therapeutics, Carlsbad, CA) that uses optical coherence reflectometry (OCR) to distinguish between intraluminal plaque and the arterial wall has recently demonstrated successful use in crossing coronary artery CTOs.

**Methods:** A total of 30 patients (7 women, 23 men; mean age 63.8 years) with known CTOs and confirmed ischemia each underwent an initial 10-minute attempt to cross the occlusion with a conventional 0.014" guidewire before it was exchanged for the Safe-Steer wire. A regression analysis was used to analyze the data and evaluate the independent effects of occlusion age and occlusion length on successful intervention with the Safe-Steer wire.

**Results:** The average lesion length was  $45.4 \pm 33.1$  mm, and the average age of the occlusion was  $53.9 \pm 78.9$  months. The primary success rate for crossing CTOs with the Safe-Steer guidewire was 86.7% (26/30). Patients were treated with angioplasty alone (10/20) or angioplasty and stenting (16/20). There was no evidence of vessel perforation in any patient. Results of the regression analysis indicated neither occlusion age nor occlusion length had significant effect ( $R^2=0.041$ ;  $F=0.36$ ,  $p=0.782$ ) on the ability to cross CTOs with the Safe-Steer wire.

**Conclusions:** Initial results indicate OCR technology enables the operator to assess intraluminal position and cross most CTOs without trauma or perforation. Advanced occlusion age and long occlusion length were not related to failure to cross the CTO, suggesting the Safe-Steer wire may have a wider therapeutic index than conventional wires or other laser wires.